

Exhibiting What is Learned: Using Exhibition Assessments and Universal Design for Learning in College Teaching

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Abstract

Universal design for learning (UDL) aims to highlight students' strengths using innovative teaching methods and assessments. In this paper, discussion of the final exhibition project in a graduate level class on special education taught through all constructs of UDL is analyzed. Students were asked to create their own final (exhibition project) highlighting six big ideas of the course in a way that exhibited their learning. Three examples of student projects are included with external links to access their video clips. Discussion of course content, structure of projects, and recommendations for use in college teaching and teacher preparation are included.

Key words: Teaching pedagogy, Universal Design for Learning, Exhibition Project, Project Based Learning

Introduction

Teachers must begin teaching and assessing to exhibit students' strengths rather than exposing their weaknesses. In the mid-1950s, (Bloom et al., 1956) suggested students have six levels of cognition (i.e., Bloom's Taxonomy) and each level builds upon those before it: 1) knowledge, 2) comprehension, 3) application, 4) analysis, 5) synthesis, and 6) evaluation. In 2002, Bloom's taxonomy was revised to reflect student understanding and cognitive processing (Krathwohl, 2002). The revised taxonomy included six dimensions that expanded on the original: 1) remember, 2) understand, 3) apply, 4) analyze, 5) evaluate, and 6) create. Too often in student learning from Pre-Kindergarten to higher education, students are only assessed on the first or second level of cognitive processes (e.g., paper-and-pencil tests, open-ended essays; Ahmed, 2016; Gardner, 1997). Students of all ages must be provided the opportunity to expand their learning and show their understanding to reach higher levels of cognition. Modeling desired skills and allowing students to show their learning in a way that best suits their strengths are the next steps in preparing teachers for classroom instruction and shifting the approach in higher education from the lowest to the highest level of learning (Strobel et al., 2007). The purpose of this paper is to provide insight to the final exhibition project in a graduate level special education course taught through the constructs of Universal Design for Learning (UDL).

Activating Students' Strengths

One way for higher education professionals to transform assessment practices is through the use of UDL. In the recent reauthorization of the Elementary and Secondary Education Act in 2015 in the United States (i.e., Every Student Succeeds Act (ESSA), 2015), Congress designated assessments to be developed, "to the extent practicable," using the principles of UDL. The creators of Universal Design for Learning (UDL) provide three distinct learning guidelines as a way to ensure all students benefit from instruction by providing: 1) multiple means of representation, 2) multiple means of action and expression, and 3) multiple means of engagement (CAST, 2012).

United States' federal guidelines embracing of the concept of UDL are not surprising, given the principles were incorporated into the Higher Education Opportunity Act (HEOA; 2008), which required schools of higher education to enable barrier-free access for all students. Furthermore, K-12 professionals are required to demonstrate UDL principles. The HEOA defined UDL as a framework for guiding educational practice that:

“(a) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (b) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.”

Professors and teachers may want to take into account their students' strengths and areas in which their students may have difficulties through blending the use of UDL with Gardner's (1997) eight multiple intelligences (i.e., linguistic, logical-mathematical, spatial, musical, body-kinesthetic, interpersonal, intra-personal, and naturalistic). Gardner felt school should be individually based, focused on students' particular strengths to foster academic and vocational growth. Gardner viewed this type of schooling with two assumptions, “not all people have the same interests and abilities; not all of us learn in the same way” (p. 350). He also suggested teachers approach instruction in a variety of ways and aim to personalize education. Bloom's Taxonomy, UDL, and Gardner's theories align with problem-based learning (PBL), specifically exhibition of learning. Exhibition projects take students to the highest level of learning in Bloom's Taxonomy: creating their own thinking and knowledge.

Problem-Based Learning/Exhibition Projects

Assessments using a PBL exhibition model are projects created and assessed through carefully developed guidelines in rubrics, which allow for students to express their learning in a genuine way and by creating their own thinking about what they learned (Black et al., 2015; Lee et al., 2014). Marra, Jonassen, Betsy, and Luft (2014) discussed the structures and ideas behind PBL, and by extension, exhibition projects. The authors

stated PBL is an approach that encourages students to encounter a problem that may have many solutions and learn by dissecting, discussing, and applying their knowledge. In many classrooms, students are asked to show mastery of skills (e.g., paper and pencil test after reading a book chapter) before they apply them to a problem, whereas PBL creates the opportunity for students to build their knowledge due to their interaction with a presented problem.

Bencze and Bowen (2009) sought to teach pre-service science teachers the structures and theory behind PBL by immersing them in a college level course balancing factual science information and discovery opportunities. Before the study began, all the participants stated they would most likely teach their future classes through traditional methods of lecture, whole-group discussions, and demonstrations. The college level course combined lectures and presentations with opportunities for the pre-service teachers to test what had been taught. By the end of the study, all participants stated they would use PBL directed lessons to some extent in their future teaching.

The learning outcomes of 15 middle school students completing an exhibition project were researched by Mann (2011). Students were provided with a learning project based on the history of computers and were assigned to either a treatment group (i.e., online avatar groups) or a control group (i.e., given information through traditional means). Each group was supplied with content through internet resources to learn both factual knowledge and conceptual knowledge. Participants in the treatment group worked collaboratively with others to actively learn about computer history and complete an exhibition project of their choice to show their learning. Participants in the control group were not given the exhibition project assignment. Although results of the two-sample t -test were not significant between the two groups for learned factual knowledge, the results for the two-sample t -test in learning conceptual structural knowledge showed significantly higher scores in the treatment group. The researcher explained through exhibition projects in their study, participants did not necessarily gain more factual knowledge than their peers, but rather gained conceptual structural knowledge that helped support and link many areas of learning through experimentation, reflection, and hands-on activities.

Sleeper (2004) discussed a science exhibition project completed by 26 fifth-grade students. The purpose of the project was to allow students to experiment with their ideas and hypotheses about a science topic of their choosing. Sleeper found students were able to use the scientific method to actively engage with lesson materials and report results in a manner that showed what they learned, rather than simply writing about it or answering test questions. Students were given the opportunity to practice skills that are normally outside of the science curriculum, including collaboration skills, intra-personal skills, and oral communication skills. Teachers assessed students based on performance in experimentation, rather than just paper-pencil work. Similar studies regarding exhibition projects related to science, technology, engineering, and mathematics (STEM) curriculum found this type of assessment (i.e., problem-based learning, exhibition projects) beneficial for students to achieve higher levels of thinking beyond basic knowledge (Bencze and Bowen, 2009; Beringer, 2007; Laursen, 2015; Smith, 2012).

A consensus in evaluation procedures between students and teachers is important for successful project-based learning (PBL) projects. West, Williams, and Williams (2013) studied the procedures necessary for assessment in PBL projects for 13 students and 4 professors at an institute of higher education. The researchers developed a qualitative study to assess participants' lived experiences with PBL projects. West and colleagues found four key criteria that should be considered by professors and students when developing PBL curriculum: (1) importance of teamwork, self-assessment, and expectations; (2) both students and professors are equal shareholders in the project; (3) consensus of standards and project goals for assessment; and (4) consistent and constant reflection.

Teacher Practice and Evaluation using Exhibition Assessment

Reflecting upon the power of UDL, multiple intelligences, Bloom's revised Taxonomy, and PBL, we (the authors of this article) set out to evaluate teacher practice in a nontraditional method with two objectives. First, we aimed to show a new way of evaluation that was not commonplace to the teachers in a graduate level course. The

second objective was to evaluate learning at this level in a nontraditional way at the highest level of Bloom's Taxonomy (i.e., creating new knowledge; (Anderson and Krathwohl, 2001). This course was a perfect opportunity to implement UDL and PBL as a model, as the students enrolled were a blend from three distinctly different disciplines.

Students in the first group were special education teachers or paraprofessionals working on a masters degree in special education. The second group was K-8 teachers with three or more years of teaching experience. Students in the third group were career-changers who had a strong background in math or science (18+ credits) and were new teachers, beginning their careers in education in the Fall of 2015 in middle school settings. Students in the second and third groups were in the Lockheed Martin/University of Central Florida (UCF) Mathematics and Science Academy, advancing their skills in mathematics and science. The Lockheed Martin/UCF Mathematics and Science Academy supports practicing teachers (K-8) completing a science or mathematics master's degree in education, as well as students pursuing an initial license in middle school science or mathematics teaching.

All participants in this study were at an advanced level of learning, but what was quickly realized by the professors and the students was their understanding of assessment was limited to thinking only about traditional paper and pencil tasks. Asking this group to complete PBL exhibition types of final exams created a culture of both learning and comradery (West et al., 2013), which is reported for others to consider as a novel approach to both learning about assessment and assessing learning outcomes.

The course began with traditional knowledge about the field of special education but involved numerous nontraditional group tasks, scavenger hunts, puzzle activities, teaching in a virtual simulator (i.e., TeachLivE™), and completing numerous activities in learning stations. The content of the course and the structure was to challenge traditional teaching approaches using UDL principles by giving new knowledge and ensuring the class experienced innovative practices to use in their own teaching. The shift in practices started in the first part of the course and concluded with a very

nontraditional final exam using an exhibition assessment founded in UDL, multiple intelligences, Bloom's revised Taxonomy, and PBL principles.

Structure of the Process

The structure for the assessment had both simple and complex components. The simple nature was these 26 master level teachers were told they would be expected to create a five-minute YouTube video that was close-captioned as part of their final exam. The nontraditional component was they were to demonstrate to their peers and the instructors that they had learned in-depth the six "big ideas" in the course: 1) impact of special education law and history; 2) inclusive education and UDL; 3) how state standards should be used to support students with disabilities; 4) collaboration between general and special education teachers; 5) impact of behavior on learning; and 6) how reading, writing, or social skills impact STEM education for students with and without disabilities. They also were informed the night of the final exam they would be asked to watch the final projects of five of their peers and to provide feedback and a rating on their peers' projects. The use of peer-review allowed teachers to create their own thinking and publically share their perception of how their colleagues expressed the key components of the course.

The complex nature of the exhibition assessment for the teachers was deciding how they would present their knowledge. Most college level classes have students complete a final exam (typically paper/pencil) as a means to show skills learned throughout the semester. A final exam is certainly a way to evaluate students, but does not necessarily showcase everyone's strengths. As the instructors of a class based on the principles of UDL, we decided to assess learning by asking the students to uniquely develop their own final that best fit their learning style. The students even had the option of creating their own rubric for grading, but all chose to use or slightly modify a rubric that had been provided (see Appendix A). By the third class, all students were required to complete a contract depicting their choice of product they would create for their final, submit their modifications, if any, to the rubric, and share in a written paragraph how they believed their project would show their learning (Black et al., 2015; West et al., 2013). Work began after both the student and the teachers signed the contract.

Students from the class signed a release form consenting that their five-minute YouTube videos of their final projects could be shared and published as part of this article. The following three examples from our class exemplify very different and unique learning styles representing the same content of working with students with disabilities. The first student used the application PowToon™ to share her learning. PowToon allows users to easily create animated videos for education, business, or extracurricular activities. The second student used his musical ability and skills of playing the guitar to re-create lyrics to popular songs to reflect the six “big ideas” from the course. The lyrics playfully depict the history of special education and the events that have shaped elementary and secondary school systems across the United States. The third student created a board game (based on the *Game of Life* by Hasbro®) to show her learning and help future students learn. Players of the game work through six “big ideas” of the class depicted by colors. Follow this link to access a YouTube playlist to view all three videos listed above:

<https://www.youtube.com/playlist?list=PL2ZfkFCjEbnEEU4JZimx8dmEdTpPWb3gk> .

What we learned from the process

Students learn in a variety of ways, so why should their learning be assessed through only one modality? Following the principles of UDL, the instructors felt it was critical to model both how teachers should instruct and assess in ways to play to the strengths of students with and without disabilities. To successfully implement the concepts of UDL in this course, we learned to rely on four inter-related constructs: planning, time, ingenuity, and guidance. It was critical to implement these constructs before the semester began. Preparation for each class was instrumental in how each learning style was accommodated and lessons were implemented (e.g., CAST, 2011; Gardner, 1997). Substantial time and forward thinking was used to make sure lessons were beneficial, engaging, and active for the students. As the class instructors, we had to provide guidance to students while they participated in group work, answered questions, and asked questions.

Our perceptions of what students learned from the process

The overall purpose of this course was to teach the students six “big ideas” in relation to special education. Those ideas drove the course and were aimed to drive the students’ learning. Through group work, individual assessments, online learning, and face-to-face teaching, students were given tools to use UDL in their own classrooms, assess their own strengths and weaknesses, and apply creativity to show the depth of their learning. Further, by modeling and demonstrating the constructs of UDL and exhibition projects, we aimed to empower the teachers to implement similar ideas in their own classrooms. In fact, one of the teachers in this course used the same model for her students’ assessments.

We wanted to give the students the opportunity to see the impact of UDL in their own learning, which would help them continue using UDL in their classrooms and students’ learning. Finally, we wanted the students to understand that implementing activities that everyone with and without disabilities can access is ethical, important for student learning, and necessary for student success (ESSA, 2015; Individuals with Disabilities Education Act (IDEA), 2004).

Recommendations for others wanting to replicate this process

It all comes down to planning! Setting up a course/class for even a seasoned veteran takes time and planning. To implement UDL and revolve around its three principles (i.e., representation, engagement, and action and expression; CAST, 2011), it is crucial to consider before any teaching begins including integrated approaches (e.g., learning stations, movie clips, group assignments) with clear instructions. Using nontraditional assessments requires a clear vision of what you want the students to learn in the course; this is of critical importance. Next, the instructors have to determine the steps needed to achieve that vision, and how the students will show mastery of the course objectives. To successfully teach all students about UDL, students’ individual strengths, and how people learn, we as professors have to implement these same strategies into our own class instruction. Although lecturing is a form of teaching and learning for

some students, we have to successfully integrate that style of teaching with many others to show the full range of UDL and what it means to meet all students' learning styles.

Conclusion

With the recent passing of the ESSA (2015) in the United States and its reliance on the Individuals with Disabilities Education Improvement Act (2004), the concepts of UDL have been interwoven into teaching all students with and without disabilities. Universal Design for Learning is built upon three main constructs (i.e., representation, engagement, action and expression; CAST, 2011), which also provided the foundation for our higher education course and the final exhibition project. We found all students chose to represent their learning based upon knowledge of their own strengths. While all students' final grades were subject to our review and measurement according to the rubric (Appendix A), we believe student learning was impacted greatly by the completion of the exhibition project that represented all three constructs of UDL.

Replication of our process and course is encouraged. We stress the need for careful and purposeful planning before a class/course begins to ensure that all students' strengths will be met and content will be represented in a variety of ways. A detailed vision and course objectives will help guide instruction, activities, and engagement during class. The exhibition project (i.e., the final project) is closely tied to PBL, which allows students to show their learning through interaction with the course material (Mann, 2011; Marra et al., 2014).

Exhibition projects and PBL are not new technology or ways of teaching, but are not commonly mentioned in the education literature. This nontraditional means of teaching and assessment allows for the engagement of all students (CAST, 2011), exemplifying all students' strengths in learning (Gardner, 1997), and meets the need to integrate the concepts of UDL in the classroom (ESSA, 2015). To successfully implement this type of teaching in K-12 classrooms, institutes of higher education should begin preparing teachers and students in all disciplines by providing strong examples of UDL practices and PBL not just through lecture but through experiences.

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Appendix A

Exhibition Project Rubric

The final exam (20%) will be developed for each person individually. You may choose to complete a traditional test or to do instead a project by yourself or with other class members to demonstrate your knowledge of the content presented in this course (e.g., group presentation, written paper, videotape, etc.)

The “Big Ideas” that must be clearly evident in your project are the following

1. The concept of inclusive education
2. How labels inform and limit teachers and students
3. How you will use technology to impact student learning
4. The process and importance of transition for students with disabilities
5. How collaboration with general educators is critical and how you will make this happen within your own teaching
6. How behavior can impact learning (including knowledge of behavioral strategies)
7. An example of how strategies can be used to improve the education of learners from diverse backgrounds
8. The importance of teaching reading in the content areas
9. Strategy instruction for math, science and social studies
10. How you will teach you students self-advocacy and transition skills

By the third class you must present what you plan to do for your final assessment and in collaboration with classmates create or modify the rubric you have been given as to how you will be evaluated on your project in each of the 8 areas listed. Although you will create the project and the grading rubric, the course instructors will review your proposed project and your grading rubric and discuss any changes needed. You will receive a signed copy of our final agreement for the final by the 5th class

Your project can be in any format you might like but here is a list of ideas to help you get started. Remember during the last class you will be expected to present at least 5 minutes on your final project.

1. Take a 50 question traditional test – However, all students choosing this option will be asked to write a set of 20 questions covering the 10 areas. The final set of questions will be selected from the pool of questions created by those choosing this option.
2. Write an 5-10 page paper related to each of the areas listed.
3. Create a collage or picture that reflects the 10 areas.
4. Complete an in-depth interview with a family of children with disabilities or a special education teacher then write a paper covering what you learned about the 8 areas.
5. Visit an agency that focuses on transition services and produce a paper or report for the class.
6. Create an in-depth semantic map related to the 10 areas. This map be created using inspiration and have extensive connections within and across the 8 areas.
7. Create a video or group presentation that reflects the 10 areas.
8. Provide a learning toolkit of websites and or resources that you will use in your classroom for students with unique learning needs.

Please submit this form at the beginning of the 3rd class. However, please start thinking about what you would like to do for a final project now.

Name: _____

Proposed Project: _____

Description or further details about your project (please use the back – Provide as much detail as possible)

The following is a tentative grading rubric for your final exam. Please submit any changes you believe are necessary to fit your unique project.

| Focus Area | Rating Scale | | Notes |
|--|--------------------------|-------------------------|-------|
| 1) The impact of law and/or history on the field of special education and STEM | 1 Limited Examples | 2 Strong Examples | |
| 2) The concept of inclusive education in STEM and the relationship of UDL | 1 Limited Examples | 2 Strong Examples | |
| 3) How the State Standards should be used to support students with disabilities in STEM area(s) across the curriculum | 1 Limited Examples | 2 Strong Examples | |
| 4) How collaboration between general and special educators is critical in and how you will make this happen within your own teaching | 1 Limited Examples | 2 Strong Examples | |
| 5) How behavior can impact learning in STEM for students | 1 Limited | 2 Strong | |

| with disabilities | Examples | Examples | |
|---|--|-------------------------|--|
| 6) How either reading, writing, or social skill instruction impacts STEM education and students with and without disabilities | 1 Limited Examples | 2 Strong Examples | |
| Overall Project | 1 Below 2 Met expectation 3 Exceeds expectations | | |
| Final Grade | <u>/20</u> | | |